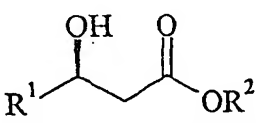
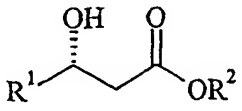
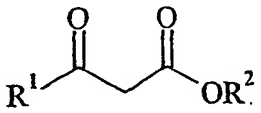
Claims

1. Process for the preparation of enantiomerically pure (*S*)- or (*R*)-4-halo-3-hydroxybutyrates of formula


(*S*)-I or

(*R*)-I,

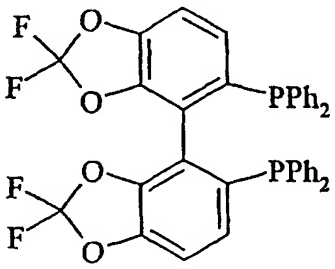
wherein R^1 is CH_2X, CHX_2 or CX_3 and X independently represents Cl and/or Br and wherein R^2 is C_{1-6}-alkyl, C_{3-6}-cycloalkyl, aryl or aralkyl, each aryl or aralkyl being optionally further substituted with one or more C_{1-4}-alkyl groups and/or halogen atoms,

which process comprises the asymmetric hydrogenation of 4-halo-3-oxobutyates of formula


II,

wherein R^1, R^2 and X are as defined above

in the presence of a catalyst of a ruthenium complex comprising a chiral ligand of formula


III.

2. The process of claim 1, wherein the ruthenium complex comprising a ligand of formula III comprises at least one diene, alkene or arene or polar solvent molecule as stabilizing ligand.

3. The process of claim 1 or 2, wherein the ruthenium complex comprising a ligand of formula III comprises at least one molecule of 1,5-cyclooctadiene or *p*-cymene as stabilizing ligand.

4. The process of one of claims 1 to 3, wherein the hydrogenation is carried out in a solution comprising a polar solvent selected from the group consisting of C_{1-4}-alcohols, dimethylsulfoxide, dimethylformamide, acetonitrile and mixtures thereof, wherein the solvent optionally contains further solvent additives.

5. The process of any one of claims 1 to 4, wherein the counterion of the ruthenium complex is selected from the group consisting of Cl^-, Br^-, I^-, BF_4^-, AsF_6^-, SbF_6^-, PF_6^-, ClO_4^- and OTf^-.

6. The process of any one of claims 1 to 5, wherein the ruthenium complex is prepared by mixing the complex of formula $[Ru_2Cl_4(cym)_2]$ with the Fluoxphos ligand in a polar solvent.

7. The process of any of claims 1 to 6, wherein the hydrogen pressure during the reaction is in the range of 1 to 60 bar and preferably in the range of 2 to 35 bar.